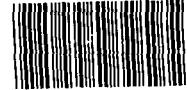




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International Specialists in the Environment



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*This document has  
been revised and  
sent to HQ*

TO: Gregory Oberley, NPL Coordinator  
FROM: Susan Kennedy, E & E FIT  
DATE: 20 July 1990  
SUBJECT: Transmittal of HRS Package Elements for Richardson Flat  
Tailings, Summit County, Utah, TDD F08-8903-06, PAN  
FUT0039HDA.  
CC: Gerry Snyder, FIT-RPO

Attached are the following draft HRS package elements for  
Richardson Flat Tailings:

Revised HRS score sheet for the surface water route;  
Revised HRS overall score sheet; and  
Revised Documentation Record.

Revisions are based on information provided in the State of Utah's  
memorandum to file (dated 7/6/90) and on information provided by the FIT  
in the Supplemental Site Inspection Report (dated 12/20/89; TDD  
F08-8903-06). Revisions were made to the most recent version of the  
Richardson Flat Tailings HRS package in FIT's possession, submitted to  
EPA Region VIII on 9/3/87 under TDD F08-8703-01.

In a telephone conversation with Werner Raab of MITRE Corporation  
(7/16/90), Werner indicated to me he is not convinced, based on current  
data, that contamination detected in RFT-SW-6 and RFT-SW-7 is  
attributable to Richardson Flat Tailings. His contention is based on  
the potential for upstream contamination in Silver Creek to wash into  
the marsh during flood events. For this reason I have not included in  
the documentation record any measurements provided by the State which

are based on the assumption that RFT-SW-6 and RFT-SW-7 are contaminated due to Richardson Flat Tailings.

As you will note from the documentation record, several approaches can be used in assigning values for facility slope/intervening terrain, distance to nearest surface water and distance to intakes. As Werner Raab is understandably reluctant to specify which approach to use, I have cited applicable supporting documentation for various scoring approaches, and have numbered them. The attached surface water pathway score is based on the the most conservative approach. In order to finalize the attached material, one approach must be decided upon and irrelevant language should be removed from the documentation record.

Other elements of the HRS package which remain incomplete are the reference list (HRS Documentation Log Sheet) and the attached supporting documents. In reviewing the 1987 package, I noted a problem with References 3 and 5. Reference 3 is an outdated radius of influence map which should be redrafted by FIT prior to package finalization. The updated map should illustrate all appropriate distance measurements once one approach has been decided upon. Secondly, Reference 5 should be omitted from the package for two reasons. The PRP objected to its use during the original public comment period, and it was included only as supporting documentation. Other documentation for the waste quantity calculation is contained in the package.

Three additional references (17, 18 and 19) were added to the reference list. I have attached Reference 19 and can also provide a complete copy of Reference 17 if you wish. Reference 18 should be the State's complete and final report on recent field events including figures, photos, etc.

Please contact me if I can be of further assistance.

Surface Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)	
<b>[1] Observed Release</b>	(0) 45	1	0	45	4.1	
If observed release is given a value of 45, proceed to line <b>[4]</b> . If observed release is given a value of 0, proceed to line <b>[2]</b> .						
<b>[2] Route Characteristics</b>					4.2	
Facility Slope and Intervening Terrain	0 (1) 2 3	1	1	3		
1-yr. 24-hr. Rainfall	0 (1) 2 3	1	1	3		
Distance to Nearest Surface Water	0 1 2 (3)	2	6	6		
Physical State	0 1 (2) 3	1	2	3		
Total Route Characteristics Score			10	15		
<b>[3] Containment</b>	0 1 2 3	1	3	3	4.3	
<b>[4] Waste Characteristics</b>					4.4	
Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18		
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 (8)	1	8	8		
Total Waste Characteristics Score			26	26		
<b>[5] Targets</b>					4.5	
Surface Water Use	0 1 (2) 3	3	6	9		
Distance to a Sensitive Environment	(0) 1 2 3	2	0	6		
Population Served/Distance to Water Intake Downstream	0 4 6 8 10 12 (16) 18 20 24 30 32 35 40	1	16	40		
Total Targets Score			22	55		
<b>[6] If line [1] is 45, multiply [1] x [4] x [5]</b> <b>If line [1] is 0, multiply [2] x [3] x [4] x [5]</b>			17160	64,350		
<b>[7] Divide line [6] by 64,350 and multiply by 100</b>			<b>S<sub>sw</sub> = 26.67</b>			

**FIGURE 7**  
**SURFACE WATER ROUTE WORK SHEET**

	S	S <sup>2</sup>
Groundwater Route Score (S <sub>gw</sub> )		
Surface Water Route Score (S <sub>sw</sub> )	26.67	711.29
Air Route Score (S <sub>a</sub> )	48.46	2348.37
$S_{gw}^2 + S_{sw}^2 + S_a^2$		3059.66
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		55.31
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		31.97

**FIGURE 10**  
**WORKSHEET FOR COMPUTING S<sub>M</sub>**

**Facility name:** Richardson Flat Tailings

**Location:** NW 1/4 Sec. 1; NE 1/4, Sec. 2; T2S, R4E, Summit County, UT

**EPA Region:** VIII

**Person(s) in charge of the facility:** United Park City Mines

309 Kearns Bldg.

Salt Lake City, Utah 84101

**Name of Reviewer:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**General description of the facility:**

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action; etc.)

Richardson Flat Tailings consists of approximately 2 million tons of mill  
tailings from metal mines in the Park City area. The tailings are  
located in an active stream valley. Surface water and air contamination  
routes were scored.

**Scores:**  $S_M = 31.97$  ( $S_{gw} = 0$   $S_{sw} = 26.67$   $S_a = 48.46$  )

$S_{FE} = 0$

$S_{DC} = 12.50$

DOCUMENTATION RECORDS  
FOR  
HAZARD RANKING SYSTEM

**INSTRUCTIONS:** The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

**FACILITY NAME:** Richardson Flat Tailings

**LOCATION:** NW 1/4, Sec. 1; NE 1/4, Sec. 2, T2S, R4E, Summit Cty, UT

## SURFACE WATER ROUTE

### 1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

Rationale for attributing the contaminants to the facility:

\* \* \*

### 2 ROUTE CHARACTERISTICS

#### Facility Slope and Intervening Terrain

Average slope of facility in percent:

1. Highest point of hazardous waste deposit = 6620 ft. (elevation of tailings impoundment, Ref. 17, Fig. 7).  
Most downhill point of documented contamination = 6600 ft. (RFT-OSE-1, RFT-OSE-2, Ref. 17, Fig. 7).  
Distance between impounded tailings and RFT-OSE-2 equals  $\approx 250$  ft.  
 $6620' - 6600' = 20' + 250' = 8\%$  slope

2. The average slope of the entire facility equals  $\leq 3\%$  (Ref. 17, p. 19, Fig. 2 and 7).

Name/description of nearest downslope surface water:

The diversion ditch transects the tailings and flows into a small "water pond" near the base of the embankment (Ref. 18). A distinct channel from the water pond through the marsh to Silver Creek was documented by Utah BSHW officials (Ref. 18).

Average slope of terrain between facility and above-cited surface water body in percent: (Note: matrix values below are based on facility slope  $\leq 3\%$ ; Ref. 1, Table 8).

1. The average slope of the terrain between impounded tailings and the diversion ditch equals 0 because the tailings and the ditch are in contact (i.e. the site is in surface water). Matrix value = 3
2. The average slope of the terrain between impounded tailings and the water pond equals  $> 10\%$  (Ref. 18). Matrix value = 2
3. The average slope of the terrain between contaminated seep sample RFT-OSE-2 and water in the marshy area was observed to be 5-8% (Ref. 17, p. 19). Matrix value = 1

Is the facility located either totally or partially in surface water?

The diversion ditch flows through the tailings (Ref. 17, p. 18, Fig. 3, Table 3; Ref. 18).

Is the facility completely surrounded by areas of higher elevation?

No.

1-Year 24-Hour Rainfall in Inches

1.25 inches (Ref. 1, Fig. 8)

Assigned value = 1 (Ref. 1, p. 32)

Distance to Nearest Downslope Surface Water

1. The diversion ditch flows through the tailings, therefore the distance equals 0.

2. The distance from the toe of the tailings pond dike to Silver Creek is approximately 300 ft. (Ref. 18).

3. The distance from contaminated seep sample RFT-0SE-2 to the probable point of entry of contaminants into surface water of the marsh is approximately 200 ft. along the likely course of runoff. The distance across the marsh from the PPE to Silver Creek is approximately 325 ft. (total distance = 525 ft.).

The assigned value for any of the above approaches equals 3 (Ref. 1, p. 32).

Physical State of Waste

The tailings were deposited in the form of a liquid slurry (Ref. 19).

They are presently in the form of "fine material".

Assigned value = 2 (Ref. 1, p. 16).

\* \* \*

**3 CONTAINMENT**

Containment

**Method(s) of waste or leachate containment evaluated:**

Surface impoundment: Diking unsound and leaking based on documented contamination in seep samples RFT-OPW-1, RFT-0SE-1 and RFT-0SE-2 (Ref. 17, Tables 4 and 5, Fig. 3 and 7).

The diversion ditch which flows through the tailings discharges to the marsh and Silver Creek constituting lack of containment (Ref. 17, Fig. 7, Ref. 18).

**Method with highest score:**

Assigned value = 3 (Ref. 1, Table 9)

#### 4 WASTE CHARACTERISTICS

##### Toxicity and Persistence

###### Compound(s) evaluated

	<u>Toxicity</u>	<u>Persistence</u>
Arsenic	3	3
Copper	3	3
Lead	3	3
	Ref. 4	Ref. 1, p. 18

###### Compound with highest score:

Arsenic	18
Copper	18
Lead	18

Ref. 1, p. 18

##### Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

Approximately 2 million tons. Ref. 5.

###### Basis of estimating and/or computing waste quantity:

$$\begin{array}{r} 160 \text{ acres (area covered by tailings) Ref. 3} \\ \times 43560 \text{ ft}^2 \\ \hline 6969600 \text{ ft}^2 \\ \times 10 \text{ ft} \text{ (average depth of tailings) Ref. 6, p. 6} \\ \hline 69696000 \text{ ft}^3 + 27 = 2,581,333 \text{ yd}^3 \text{ or tons tailings} \end{array}$$

\* \* \*

#### 5 TARGETS

##### Surface Water Use

###### Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Silver Creek is used for irrigation of pastureland and hay fields (Ref. 7, 8, 9; Ref. 17, App. D) but is not used as a drinking water source (Ref. 10).

Is there a tidal influence?

No.

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

None

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

No freshwater wetland (>5 acres) within one mile of the site.

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

None known.

Ref. 11.

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

G.M. Pace Ditch - Diverted from Silver Creek at 500' N and 625' W of SE corner of Sec. 35, T1S, R4E (Ref. 12A).

Pace Spring Ditch - Diverted from Silver Creek at 660' N and 2145' W of the E 1/4 corner of Sec. 35, T1S, R4E (Ref. 12C).

Pace & Homer Ditch - Intersects Silver Creek in the S 1/2 Sec. 35, T1S, R4E (Ref. 17, Fig. 3).

The above irrigation ditches are used for flood and sprinkle irrigation of pasturland, alfalfa and grain fields (Ref. 7, 8, 9 and 17, App. D).

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

330	acres irrigated
<u>1.5</u>	persons/acre
494	

Ref. 17, p. 23 and App. D

**Total population served:**

494

**Name/description of nearest of above water bodies:**

G.M. Pace Irrigation Ditch diverted from Silver Creek.

**Distance to above-cited intakes, measured in stream miles.**

1. The distance from contaminated seep sediment sample RFT-0SE-2 to the G.M. Pace Ditch diversion is 2865 feet measured along the course of surface water flow (Ref. 17, p. 23).

2. Note: UBSHW officials noted in Ref. 18 "the sloughing of tailings into the diversion ditch" at a location where photograph #2 was taken. If this location can be documented on a map, the distance can be measured from that point to the G.M. Pace Ditch diversion along the course of water flow. It is likely that this measured distance will fall into the same 2001 ft. to 1 mile range yielding a matrix value of 16 (Ref., p. 38).

HRS DOCUMENTATION LOG SHEET		SITE NAME <u>Richardson Flat Tailings</u>	
		CITY <u>Park City</u>	STATE <u>UT</u>
		IDENTIFICATION NUMBER <u>UTD030952840</u>	
REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE		
1	Uncontrolled Hazardous Waste Site Ranking System - A Users Manual; U.S. EPA; 1984.		
2	Analytical Results Report for Richardson Flat Tailings; S. Kennedy, Ecology and Environment, Inc. (E&E); 10/25/85, TDD R8-8508-07.		
3	Radius of Influence Map for Richardson Flat Tailings.		
4	Dangerous Properties of Industrial Materials; 5th ed., N.I. Sax, 1979.		
5	Telecon: J. Holcomb (E&E) to K. Gee (UPCM); 7/12/85.		
6	Drilling Log for Boring RT-2 in Report of Sampling Activities for Richardson Flat Tailings; S. Kennedy, E&E; 9/30/85.		
7	Telecon: S. Kennedy (E&E) to J. Anderson (Utah Div. of Water Rights); 7/18/85.		
8	Telecon: S. Kennedy (E&E) to M. Oliver (J.J. Johnson & Assoc.); 7/18/85.		
9	Telecon: S. Kennedy (E&E) to S. Pace (Silver Creek Irrigation Co.); 7/18/85		
10	Telecon: S. Kennedy (E&E) to C. Mize (Utah Bur. of Public Water Supply); 7/17/85.		
11	Telecon: S. Kennedy (E&E) to L. England (U.S. Fish & Wildlife Service); 9/4/85.		
12	Utah Div. of Water Rights Information Packet; 8/13/87; Includes A) Proposed Determination (1924); B) Weber River Decree (1937); and C) Blue-line Drainage Plats (1920's); D) Memo to File, S. Kennedy, E&E, 9/29/87.		
13	Analytical Results Report of Air Sampling at Richardson Flat Tailings; H. Schmelzer, E&E; 9/ 9/87; TDD R8-8608-05.		

